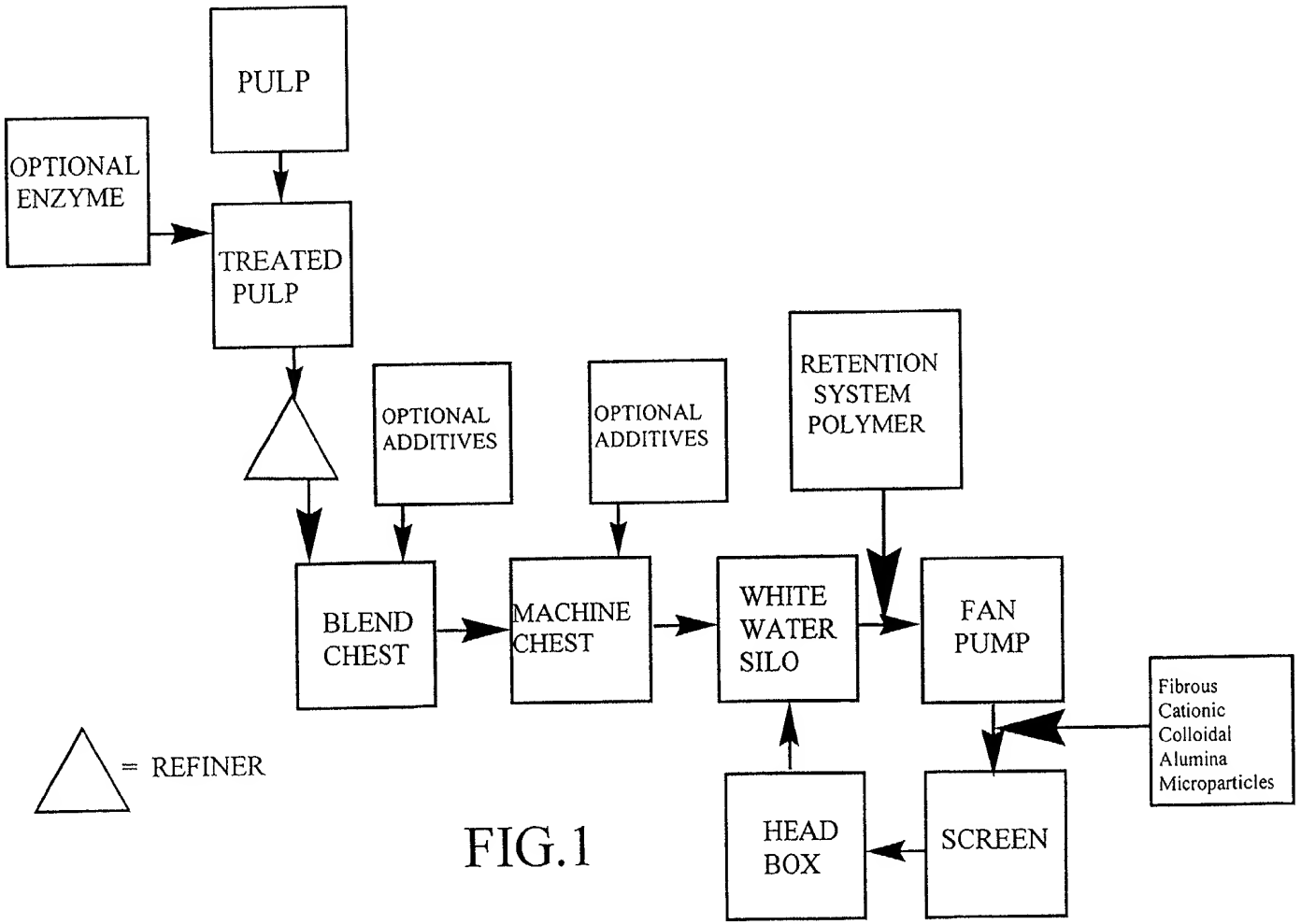
PULP
OPTIONAL ENZYME
TREATED PULP
OPTIONAL ADDITIVES
OPTIONAL ADDITIVES
RETENTION SYSTEM POLYMER
BLEND CHEST
MACHINE CHEST
WHITE WATER SILO
FAN PUMP
Fibrous Cationic Colloidal Alumina Microparticles
= REFINER
HEAD BOX
SCREEN

FIG.1

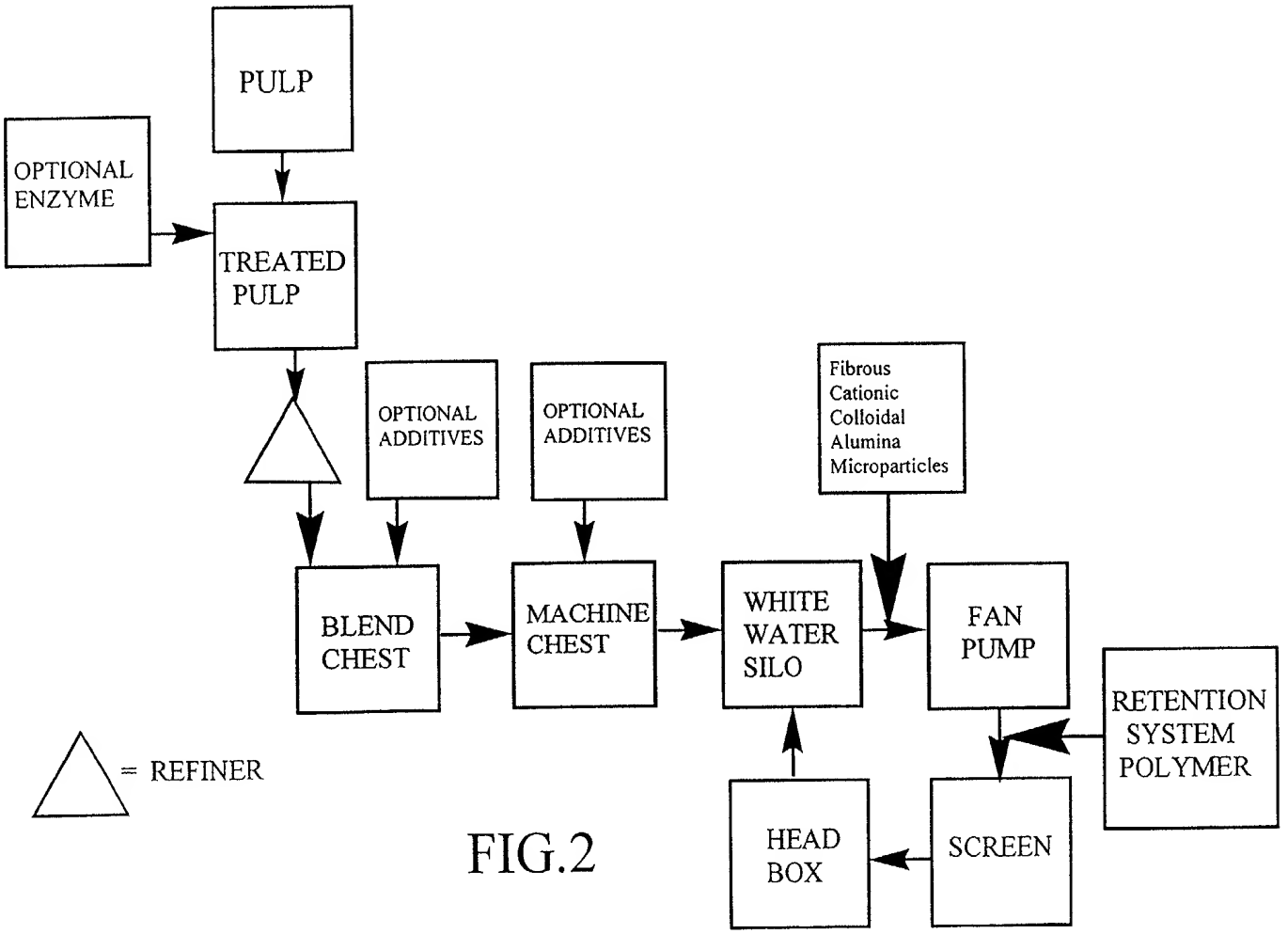
PULP
OPTIONAL ENZYME
TREATED PULP
OPTIONAL ADDITIVES
OPTIONAL ADDITIVES
Fibrous Cationic Colloidal Alumina Microparticles
BLEND CHEST
MACHINE CHEST
WHITE WATER SILO
FAN PUMP
RETENTION SYSTEM POLYMER
= REFINER
HEAD BOX
SCREEN

FIG.2

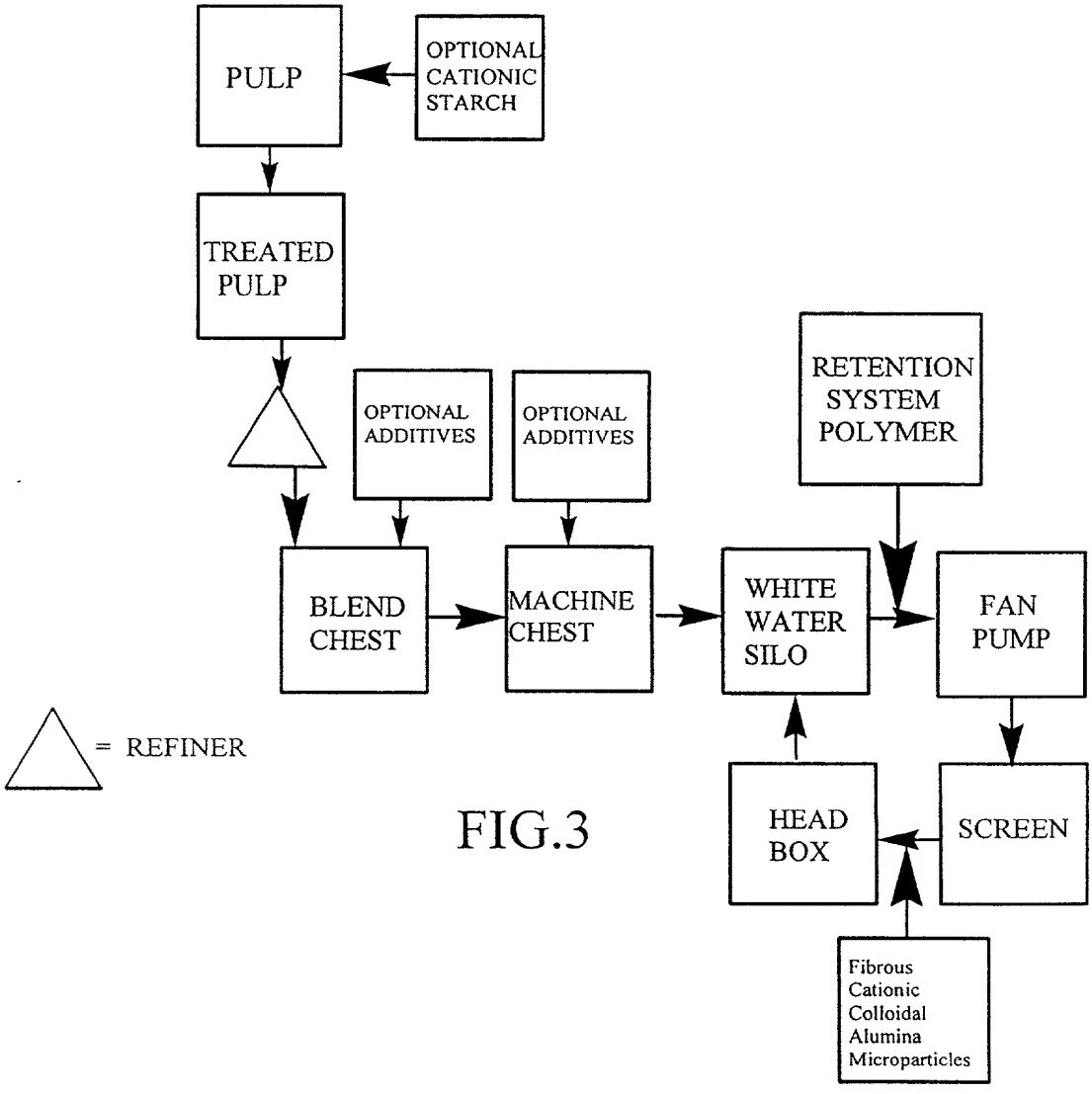
PULP
OPTIONAL CATIONIC STARCH
TREATED PULP
OPTIONAL ADDITIVES
OPTIONAL ADDITIVES
RETENTION SYSTEM POLYMER
BLEND CHEST
MACHINE CHEST
WHITE WATER SILO
FAN PUMP
= REFINER
HEAD BOX
SCREEN
Fibrous Cationic Colloidal Alumina Microparticles

FIG.3

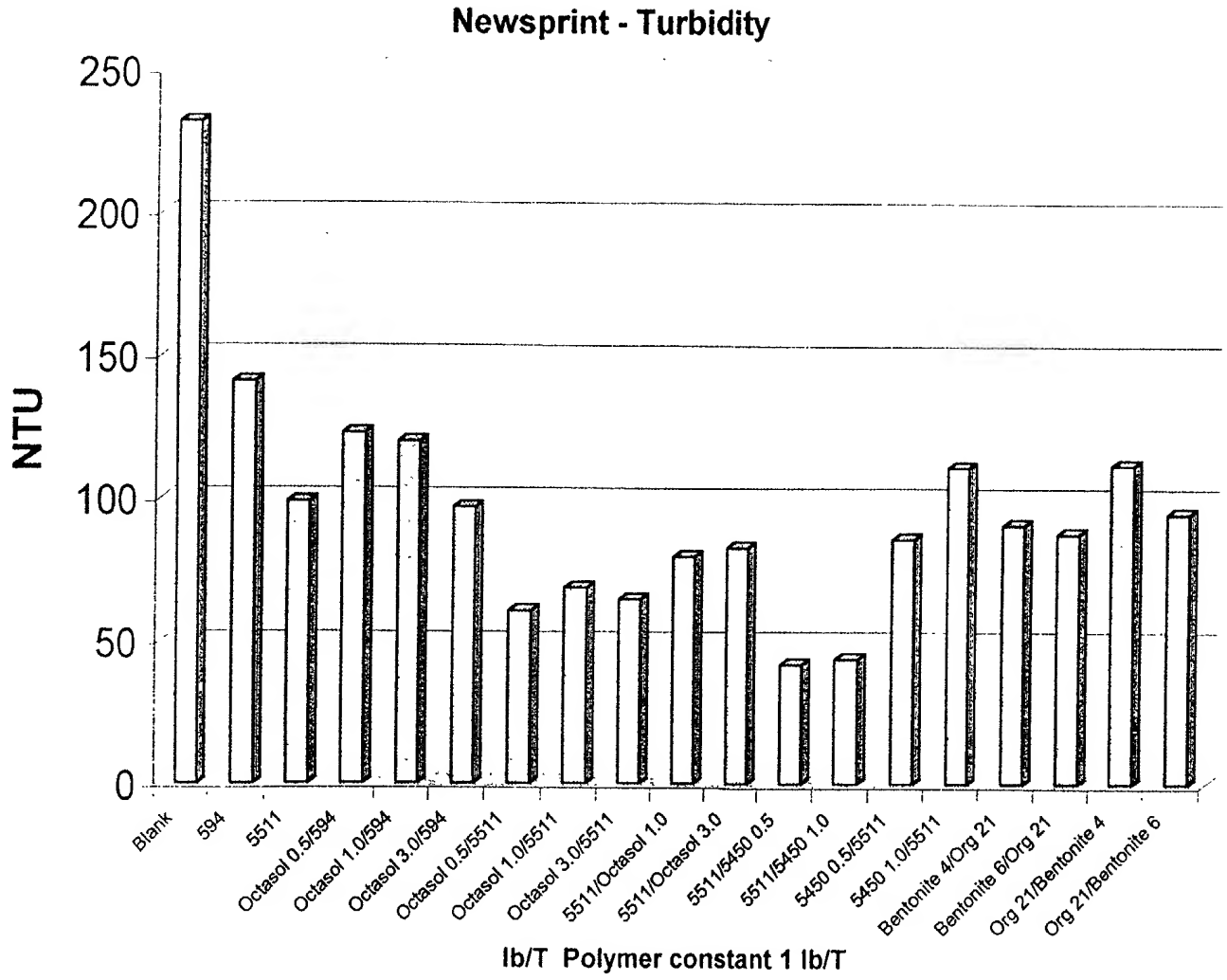

FIG. 4

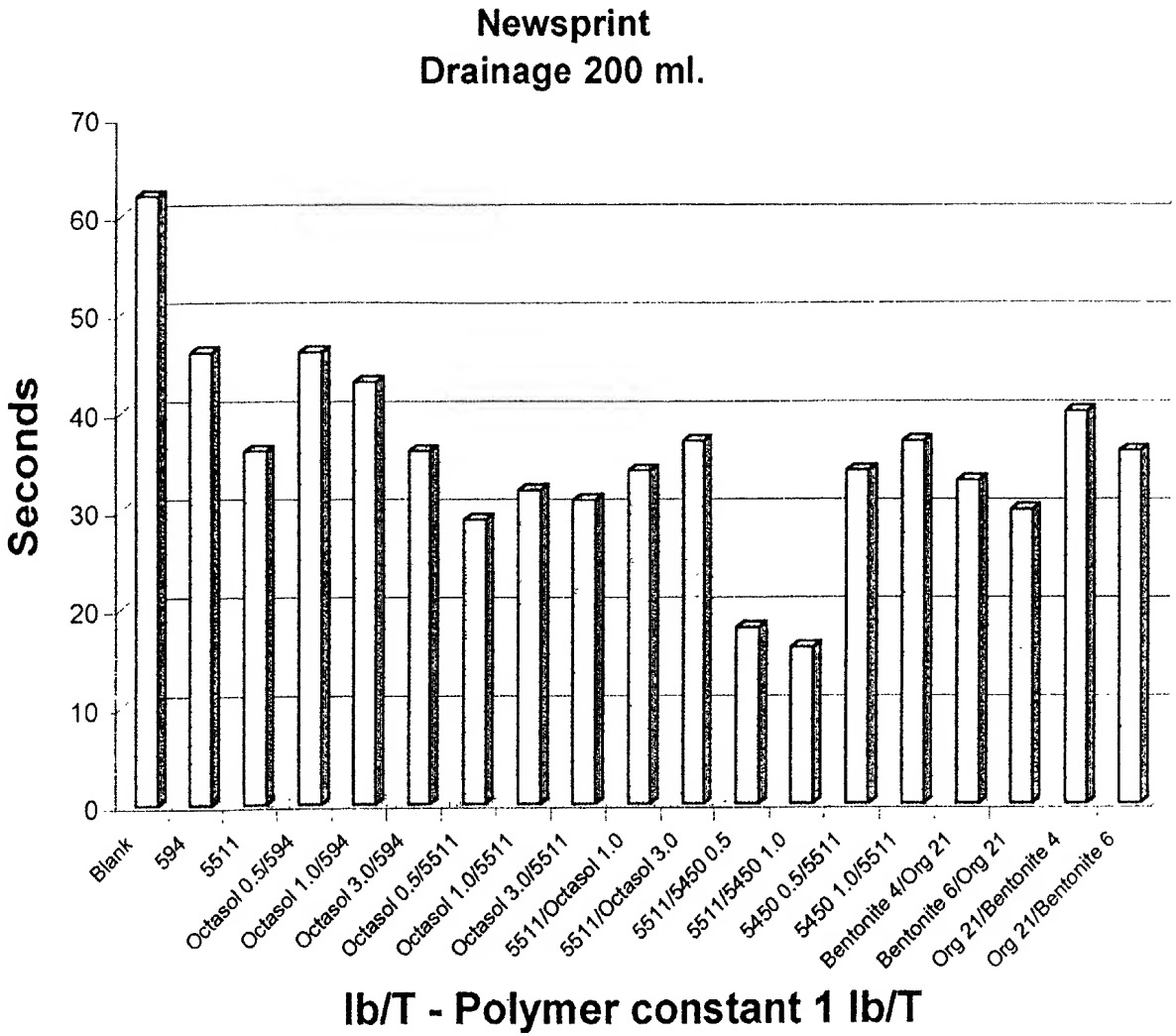
Newsprint
Drainage 200 ml.
Seconds
70
60
50
40
30
20
10
0
Blank
594
5511
Octasol 0.5/594
Octasol 1.0/594
Octasol 3.0/594
Octasol 0.5/5511
Octasol 1.0/5511
Octasol 3.0/5511
5511/Octasol 1.0
5511/Octasol 3.0
5511/5450 0.5
5511/5450 1.0
5450 0.5/5511
5450 1.0/5511
Bentonite 4/Org 21
Bentonite 6/Org 21
Org 21/Bentonite 4
Org 21/Bentonite 6
lb/T - Polymer constant 1 lb/T

FIG. 5

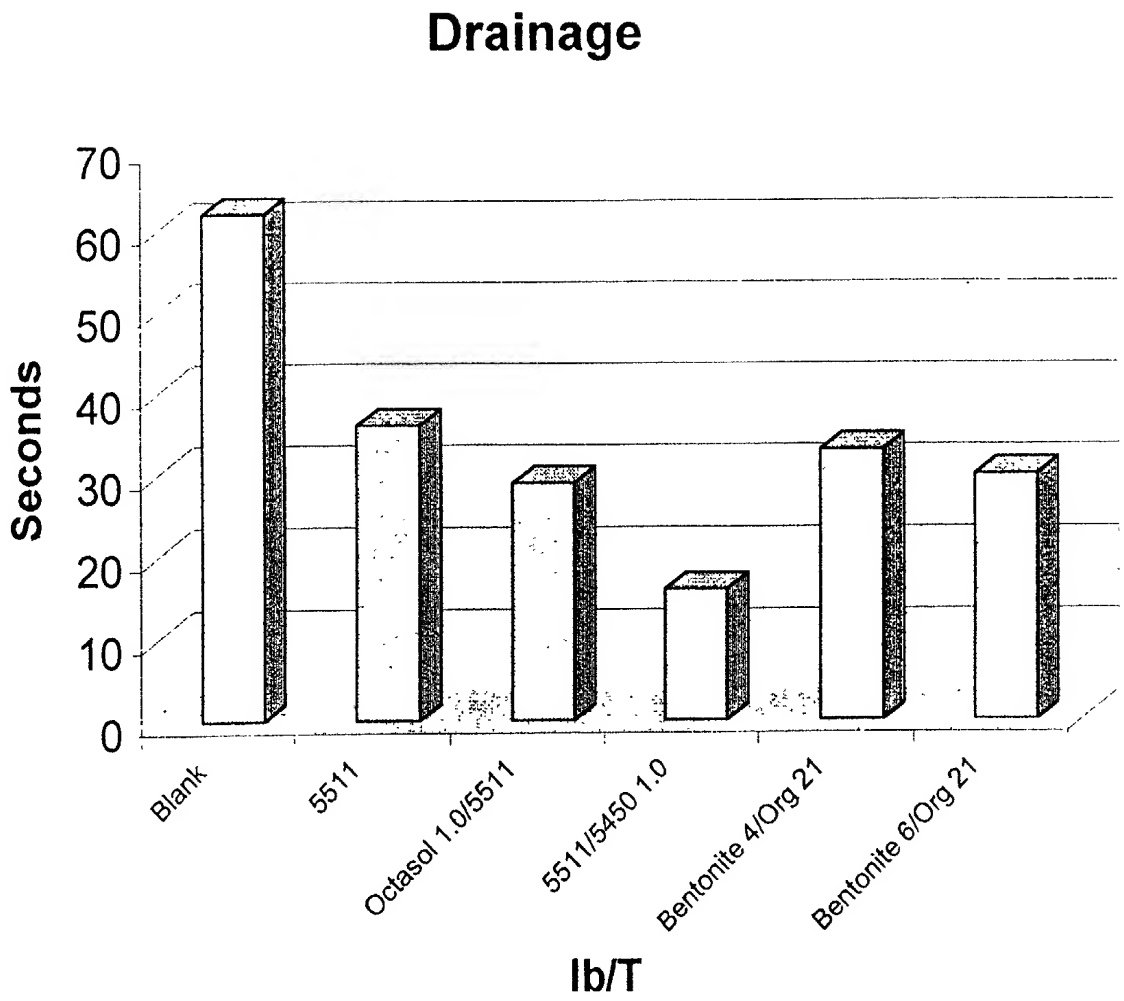

FIG. 6

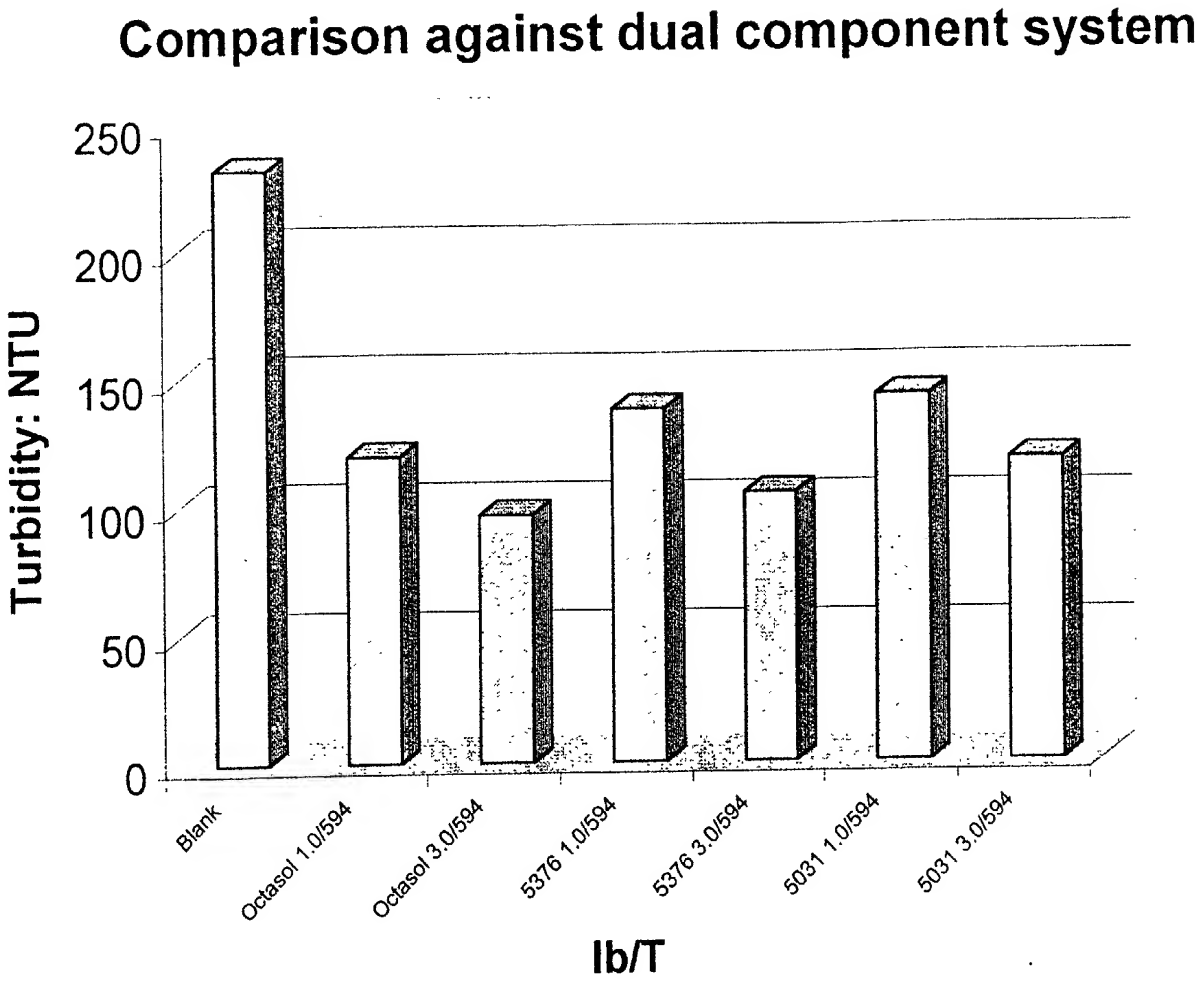

FIG. 7

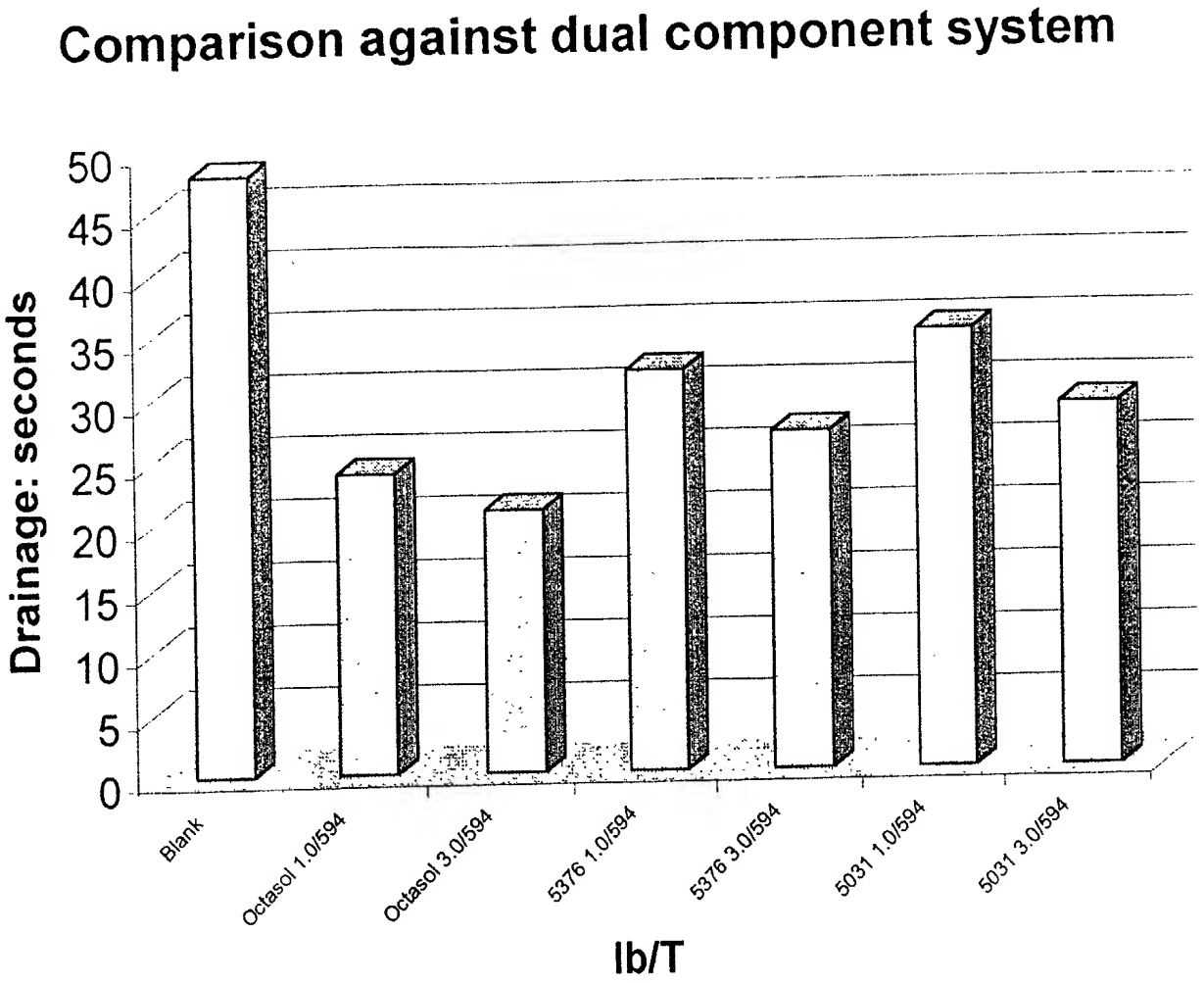
Comparison against dual component system
Drainage: seconds
50
45
40
35
30
25
20
15
10
5
0
Blank
Octasol 1.0/594
Octasol 3.0/594
5376 1.0/594
5376 3.0/594
5031 1.0/594
5031 3.0/594
lb/T

FIG. 8

20% Hard whites
40% manfold white ledger
40% hogged (tabloid news)
cationic demand - 0.6 meq/l
pH - 7.9

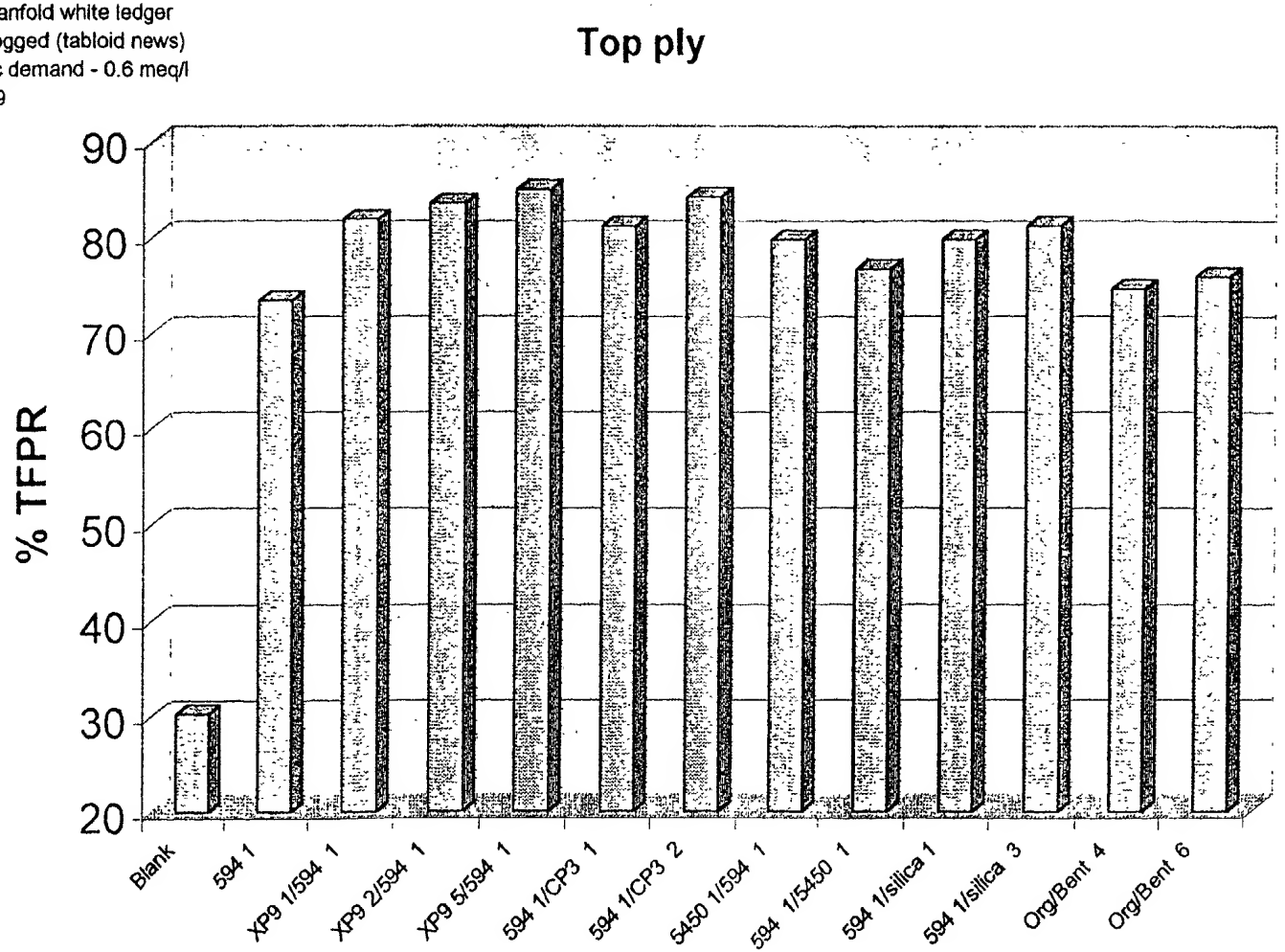

FIG. 9

20% Hard whites
40% manfold white ledger
40% hogged (tabloid news)
cationic demand - 0.6 meq/l
pH - 7 9

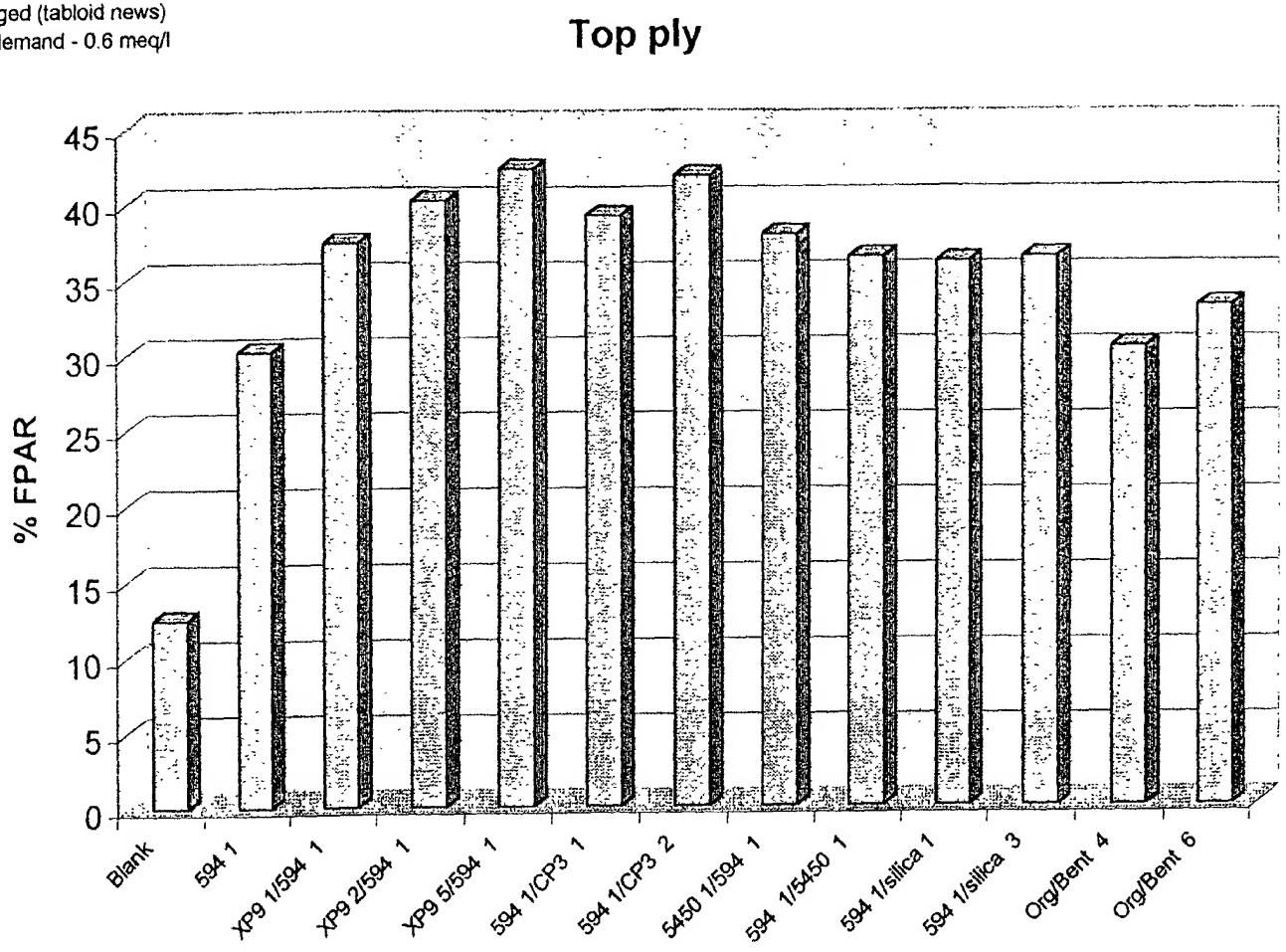

FIG. 10

30% Corrugated
60% box
10% ONP
pH - 7.4
Cationic demand - .4 meq/L

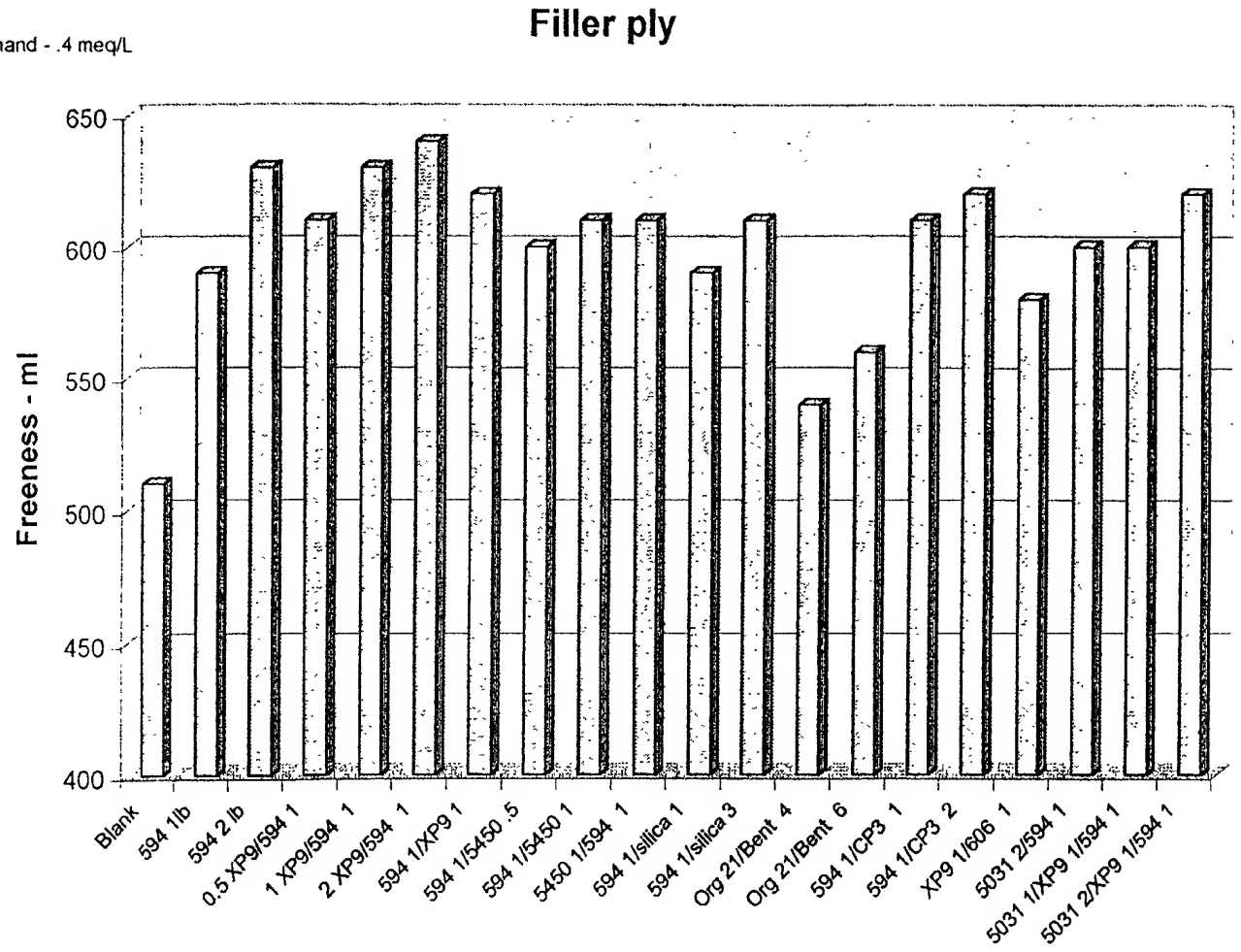

FIG. 11

100% ONP
pH -7 85
Cationic demand- .55 meq/L

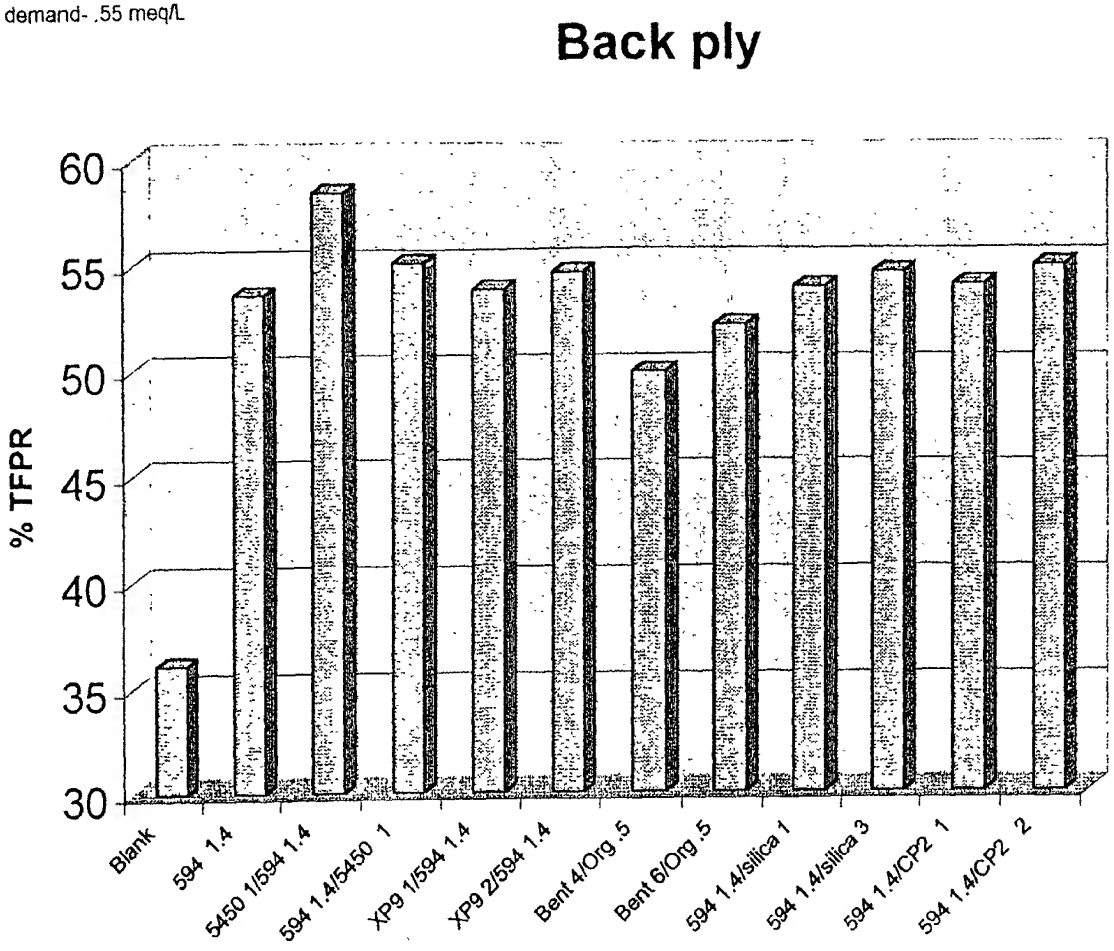

FIG. 12

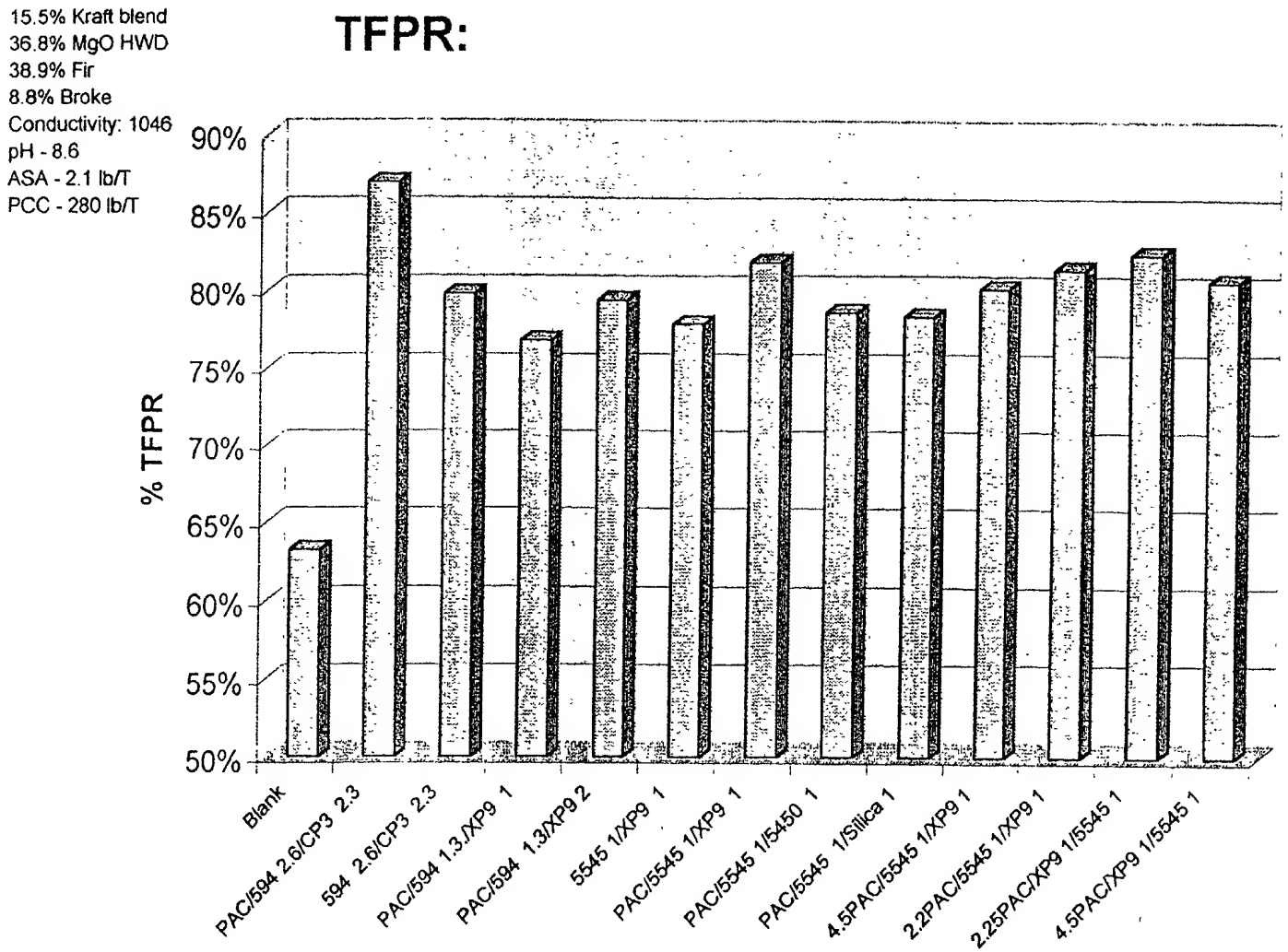
15.5% Kraft blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
Conductivity: 1046
pH - 8.6
ASA - 2.1 lb/T
PCC - 280 lb/T
TFPR:
% TFPR
90%
85%
80%
75%
70%
65%
60%
55%
50%
Blank
PAC/594 2.6/CP3 2.3
594 2.6/CP3 2.3
PAC/594 1.3/XP9 1
PAC/594 1.3/XP9 2
5545 1/XP9 1
PAC/5545 1/XP9 1
PAC/5545 1/5450 1
PAC/5545 1/Silica 1
4.5PAC/5545 1/XP9 1
2.2PAC/5545 1/XP9 1
2.25PAC/XP9 1/5545 1
4.5PAC/XP9 1/5545 1

FIG. 13

15.5% Kraft blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
Conductivity: 1046
pH - 8.6
ASA - 2.1 lb/T
PCC - 280 lb/T

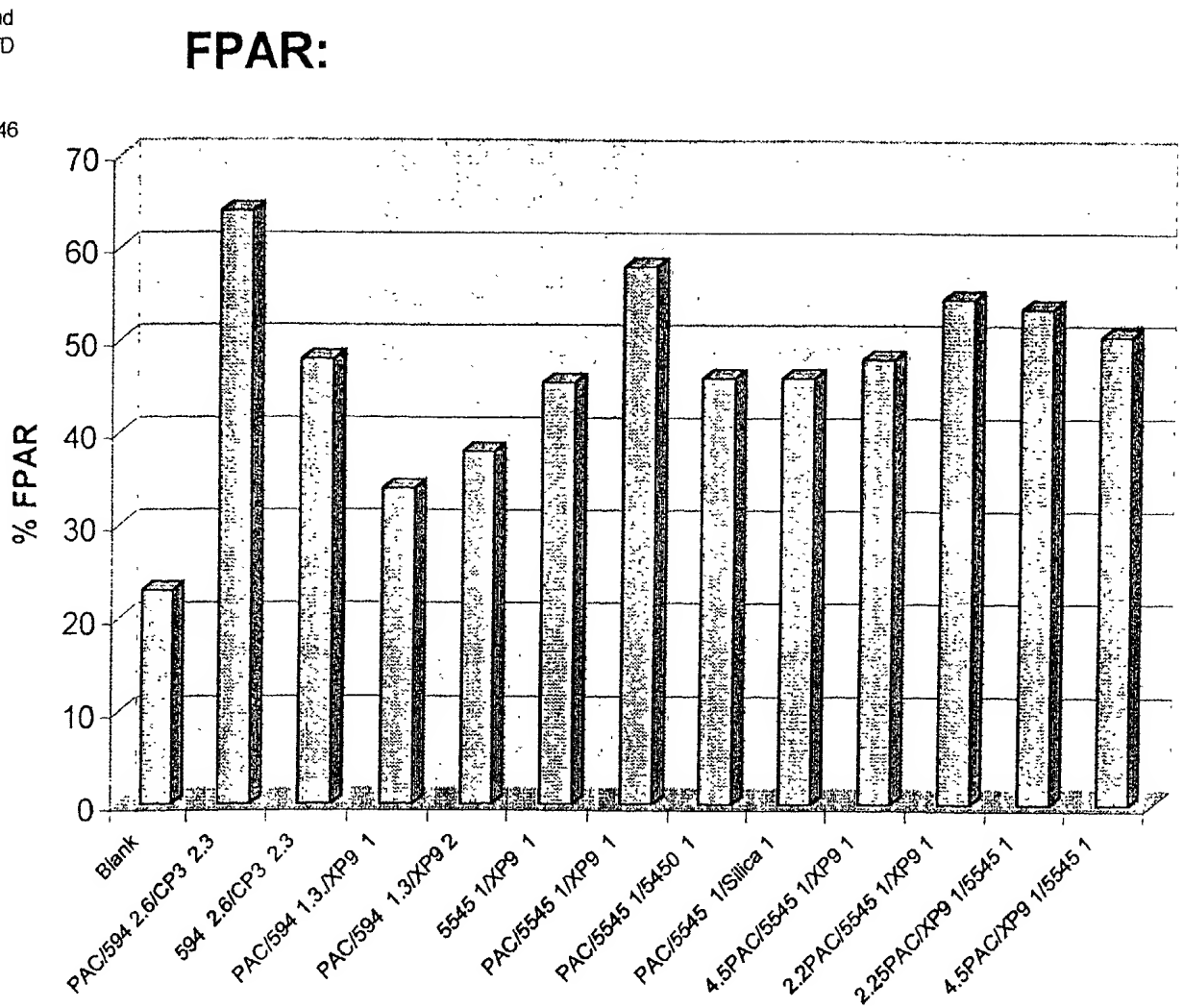

FIG. 14

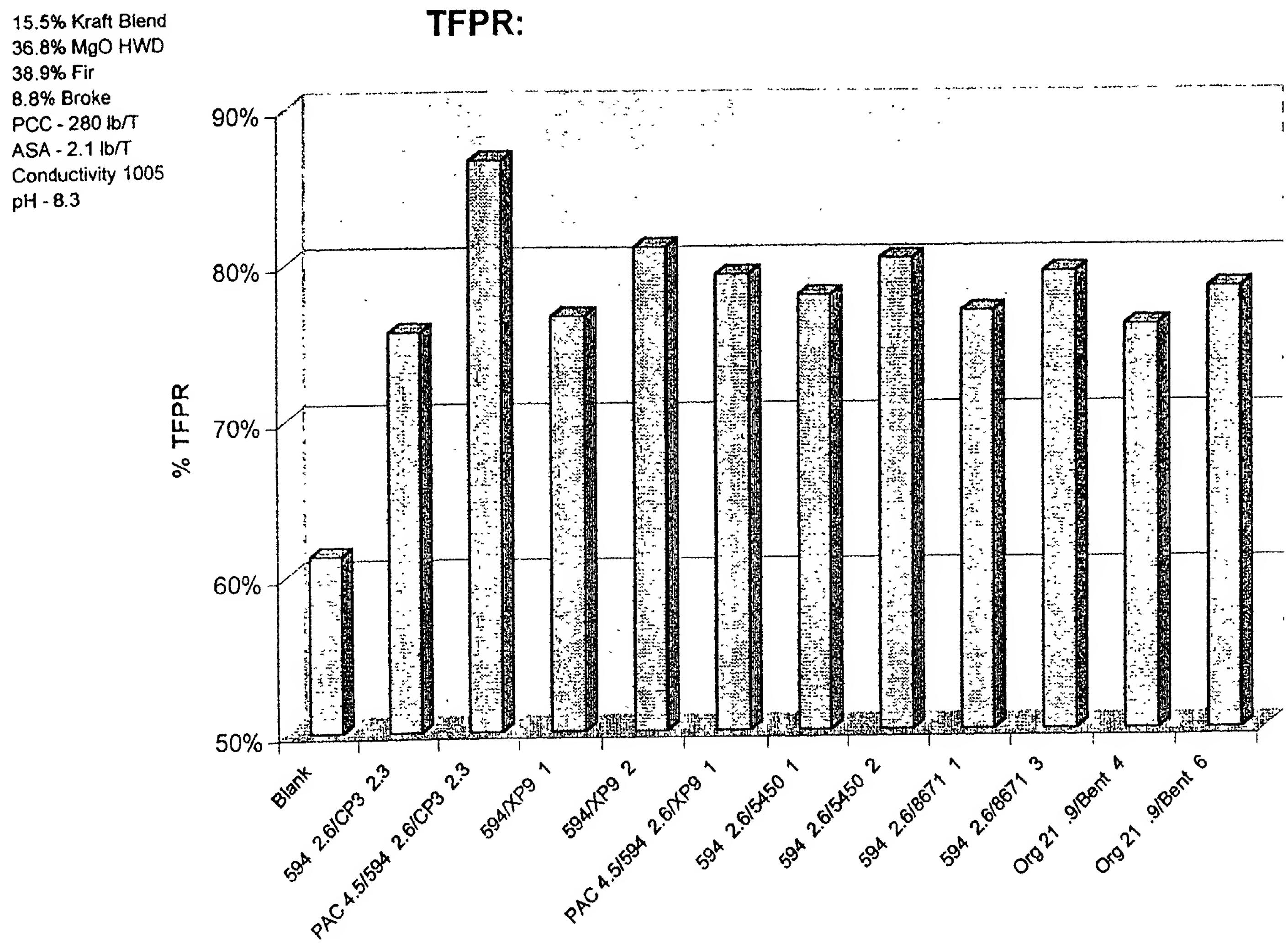
15.5% Kraft Blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
PCC - 280 lb/T
ASA - 2.1 lb/T
Conductivity 1005
pH - 8.3
TFPR:
% TFPR
90%
80%
70%
60%
50%
Blank
594 2.6/CP3 2.3
PAC 4.5/594 2.6/CP3 2.3
594/XP9 1
594/XP9 2
PAC 4.5/594 2.6/XP9 1
594 2.6/5450 1
594 2.6/5450 2
594 2.6/8671 1
594 2.6/8671 3
Org 21 .9/Bent 4
Org 21 .9/Bent 6

FIG. 15

15.5% Kraft Blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
PCC - 280 lb/T
ASA - 2.1 lb/T
Conductivity 1005
pH - 8.3

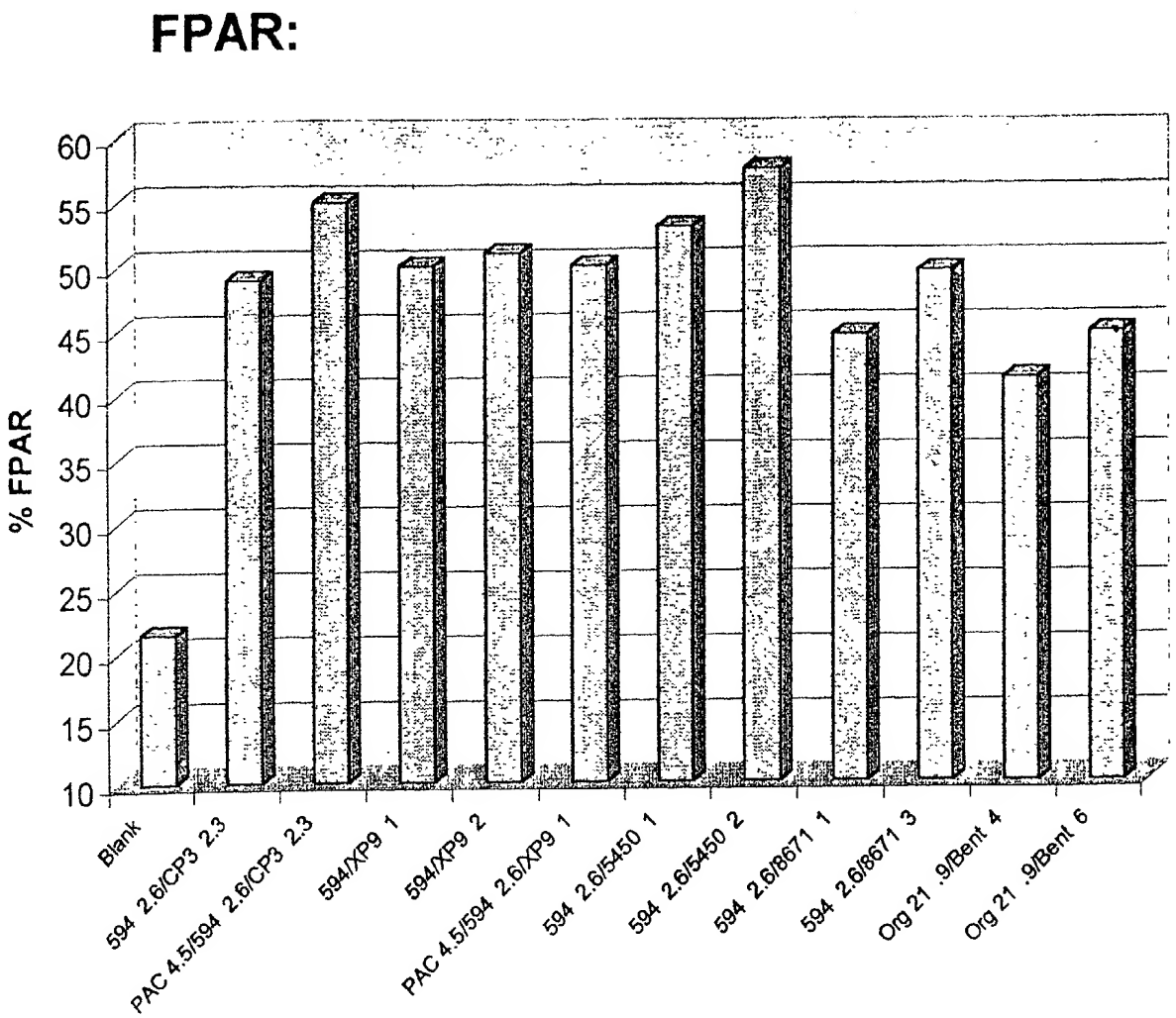

FIG. 16

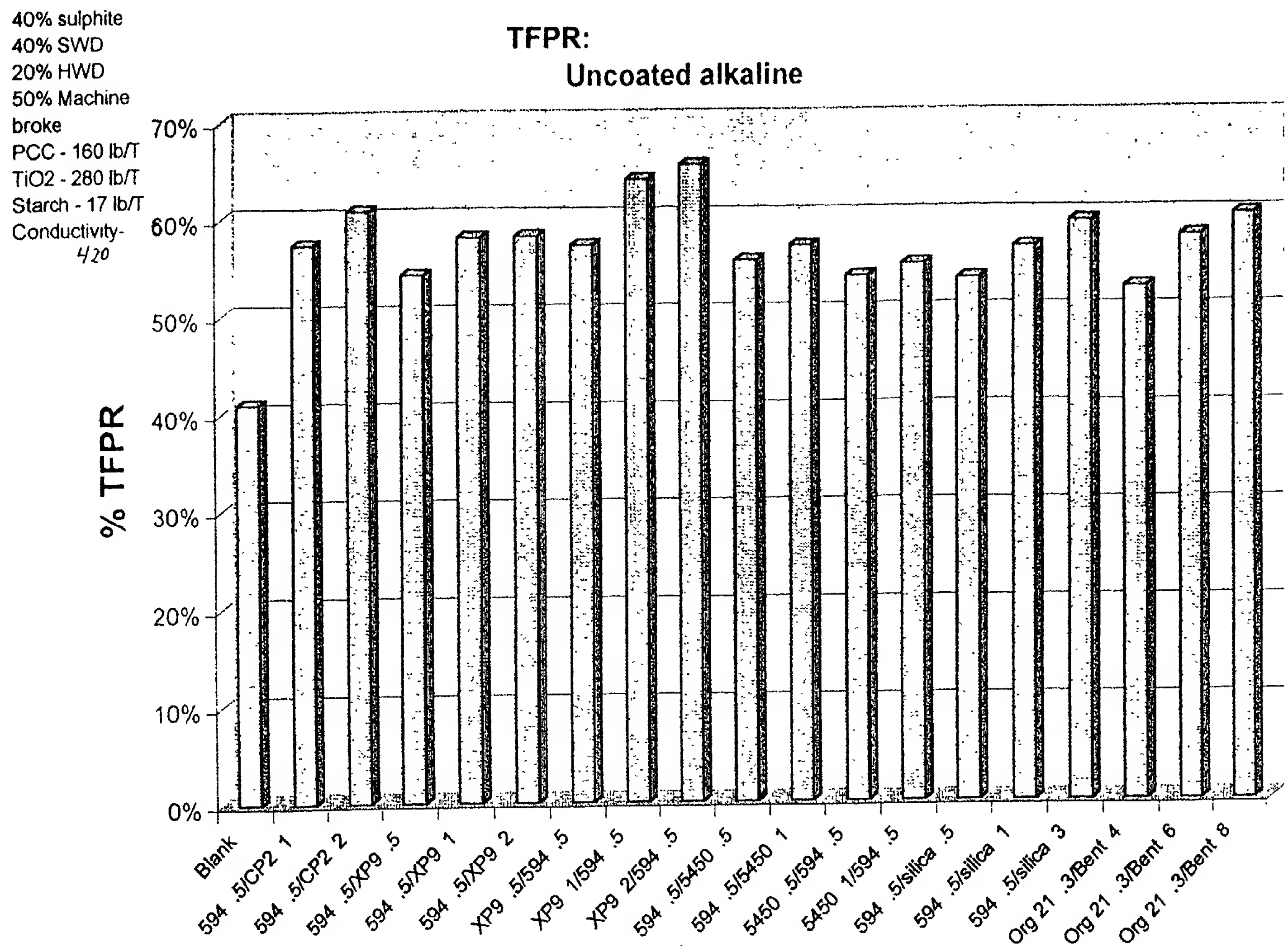
40% sulphite
40% SWD
20% HWD
50% Machine broke
PCC - 160 lb/T
TiO2 - 280 lb/T
Starch - 17 lb/T
Conductivity-
4/20
TFPR:
Uncoated alkaline
% TFPR
70%
60%
50%
40%
30%
20%
10%
0%
Blank
594 .5/CP2 1
594 .5/CP2 2
594 .5/XP9 .5
594 .5/XP9 1
594 .5/XP9 2
XP9 .5/594 .5
XP9 1/594 .5
XP9 2/594 .5
594 .5/5450 .5
594 .5/5450 1
5450 .5/594 .5
5450 1/594 .5
594 .5/silica .5
594 .5/silica 1
594 .5/silica 3
Org 21 .3/Bent 4
Org 21 .3/Bent 6
Org 21 .3/Bent 8

FIG. 17

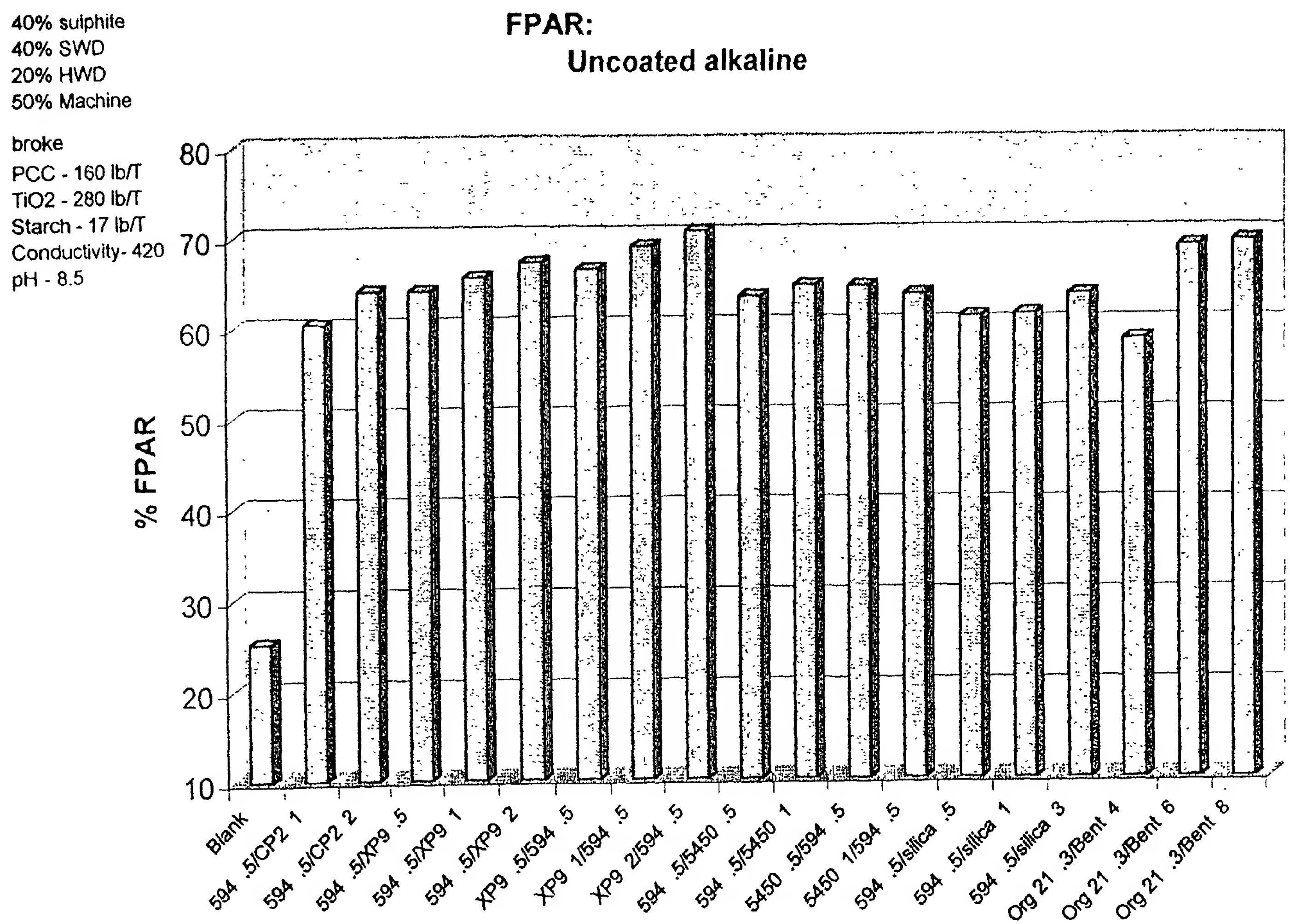
40% sulphite
40% SWD
20% HWD
50% Machine
broke
PCC - 160 lb/T
TiO2 - 280 lb/T
Starch - 17 lb/T
Conductivity- 420
pH - 8.5
FPAR:
Uncoated alkaline
% FPAR
80
70
60
50
40
30
20
10
Blank
594 .5/CP2 1
594 .5/CP2 2
594 .5/XP9 .5
594 .5/XP9 1
594 .5/XP9 2
XP9 .5/594 .5
XP9 1/594 .5
XP9 2/594 .5
594 .5/5450 .5
594 .5/5450 1
5450 .5/594 .5
5450 1/594 .5
594 .5/silica .5
594 .5/silica 1
594 .5/silica 3
Org 21 .3/Bent 4
Org 21 .3/Bent 6
Org 21 .3/Bent 8

FIG. 18

40% GWD
47% Sulphite
13% SWD
15% Machine broke
20% Coated broke
Filler - 15lb/t
Starch - 25 lb/t
Alum - 6 lb/t
Conductivity - 1700
pH - 6.2
Charge- .085 meq/L

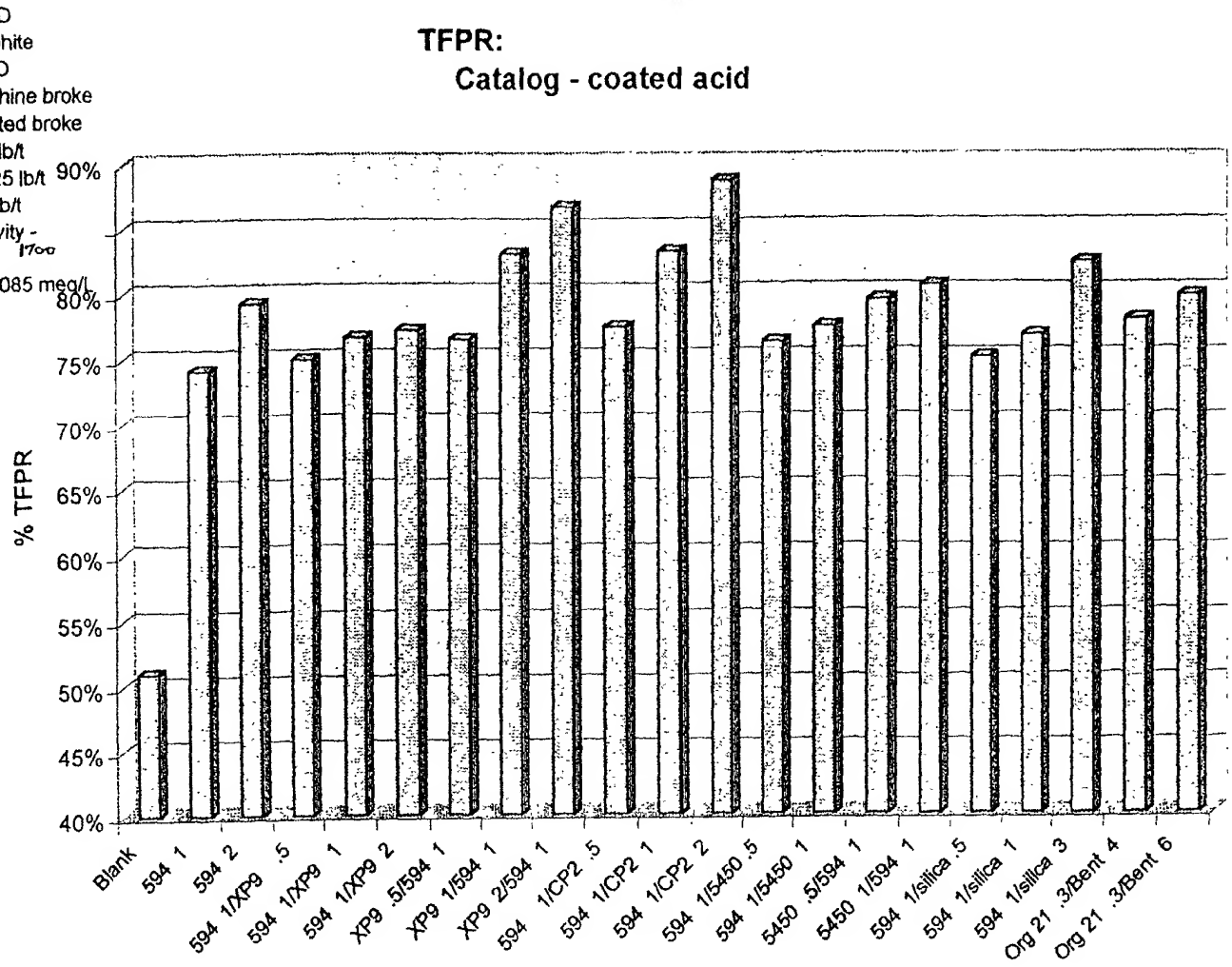

FIG. 19

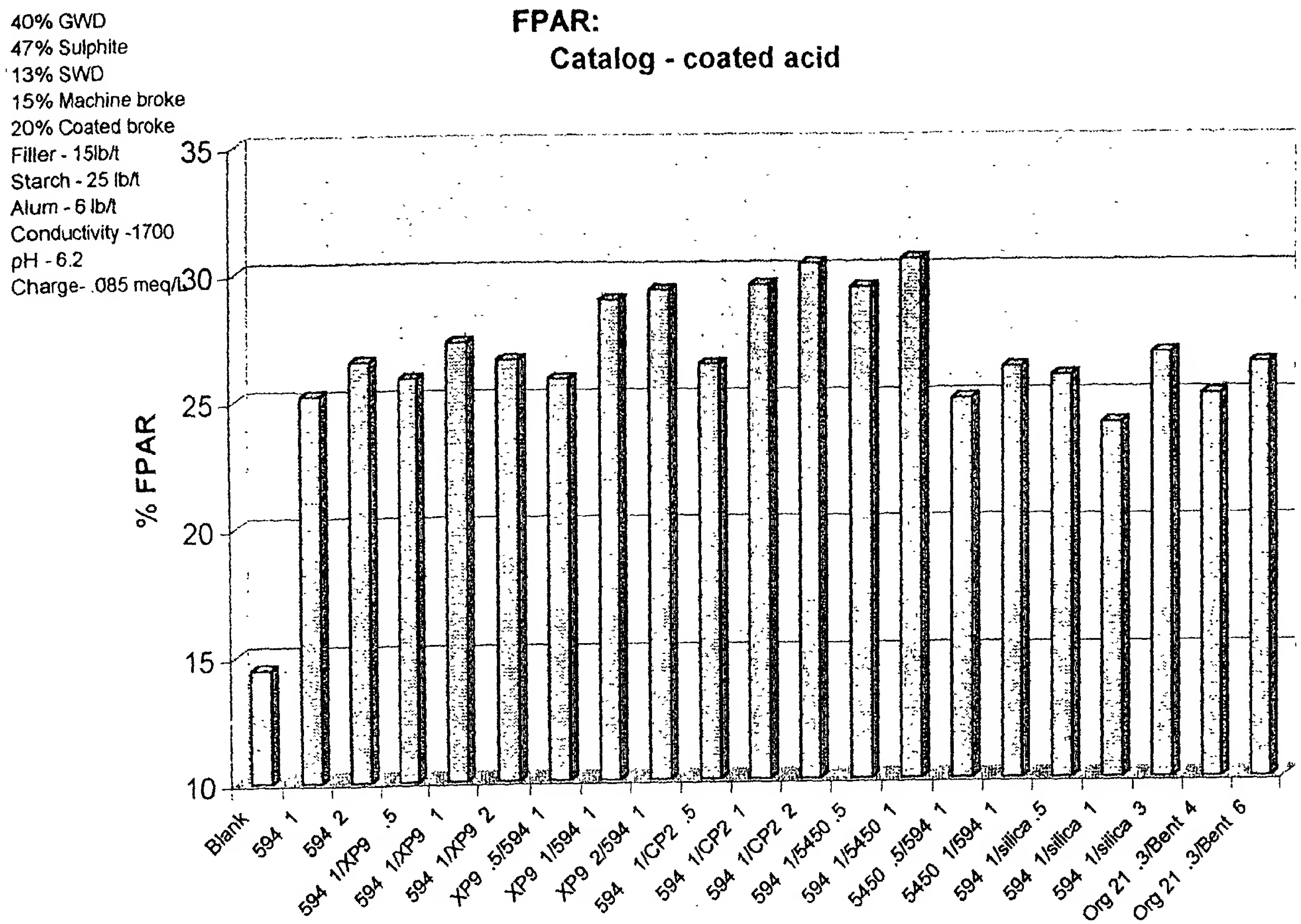
40% GWD
47% Sulphite
13% SWD
15% Machine broke
20% Coated broke
Filler - 15lb/t
Starch - 25 lb/t
Alum - 6 lb/t
Conductivity -1700
pH - 6.2
Charge- .085 meq/L
FPAR:
Catalog - coated acid
% FPAR
35
30
25
20
15
10
Blank
594 1
594 2
594 1/XP9 .5
594 1/XP9 1
594 1/XP9 2
XP9 .5/594 1
XP9 1/594 1
XP9 2/594 1
594 1/CP2 .5
594 1/CP2 1
594 1/CP2 2
594 1/5450 .5
594 1/5450 1
5450 .5/594 1
5450 1/594 1
594 1/silica .5
594 1/silica 1
594 1/silica 3
Org 21 .3/Bent 4
Org 21 .3/Bent 6

FIG. 20

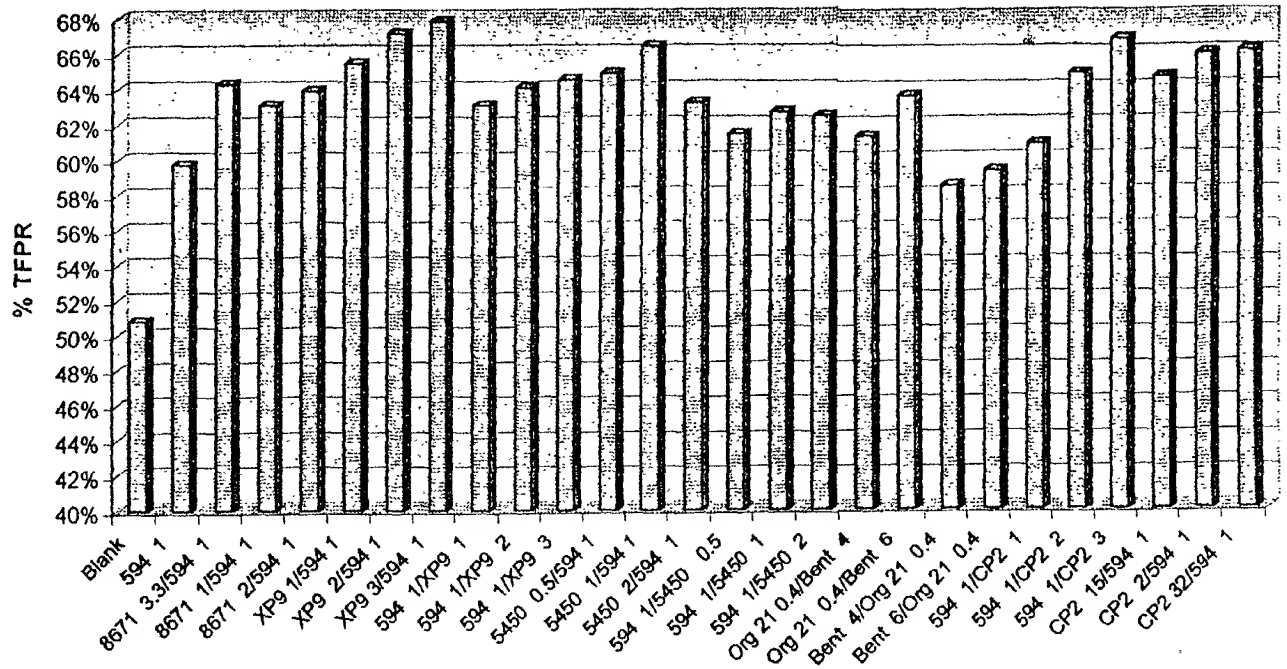
% TFPR
68%
66%
64%
62%
60%
58%
56%
54%
52%
50%
48%
46%
44%
42%
40%
Blank
594 1
8671 3.3/594 1
8671 1/594 1
8671 2/594 1
XP9 1/594 1
XP9 2/594 1
XP9 3/594 1
594 1/XP9 1
594 1/XP9 2
594 1/XP9 3
5450 0.5/594 1
5450 1/594 1
5450 2/594 1
594 1/5450 0.5
594 1/5450 1
594 1/5450 2
Org 21 0.4/Bent 4
Org 21 0.4/Bent 6
Bent 4/Org 21 0.4
Bent 6/Org 21 0.4
594 1/CP2 1
594 1/CP2 2
594 1/CP2 3
CP2 15/594 1
CP2 2/594 1
CP2 32/594 1

FIG. 21

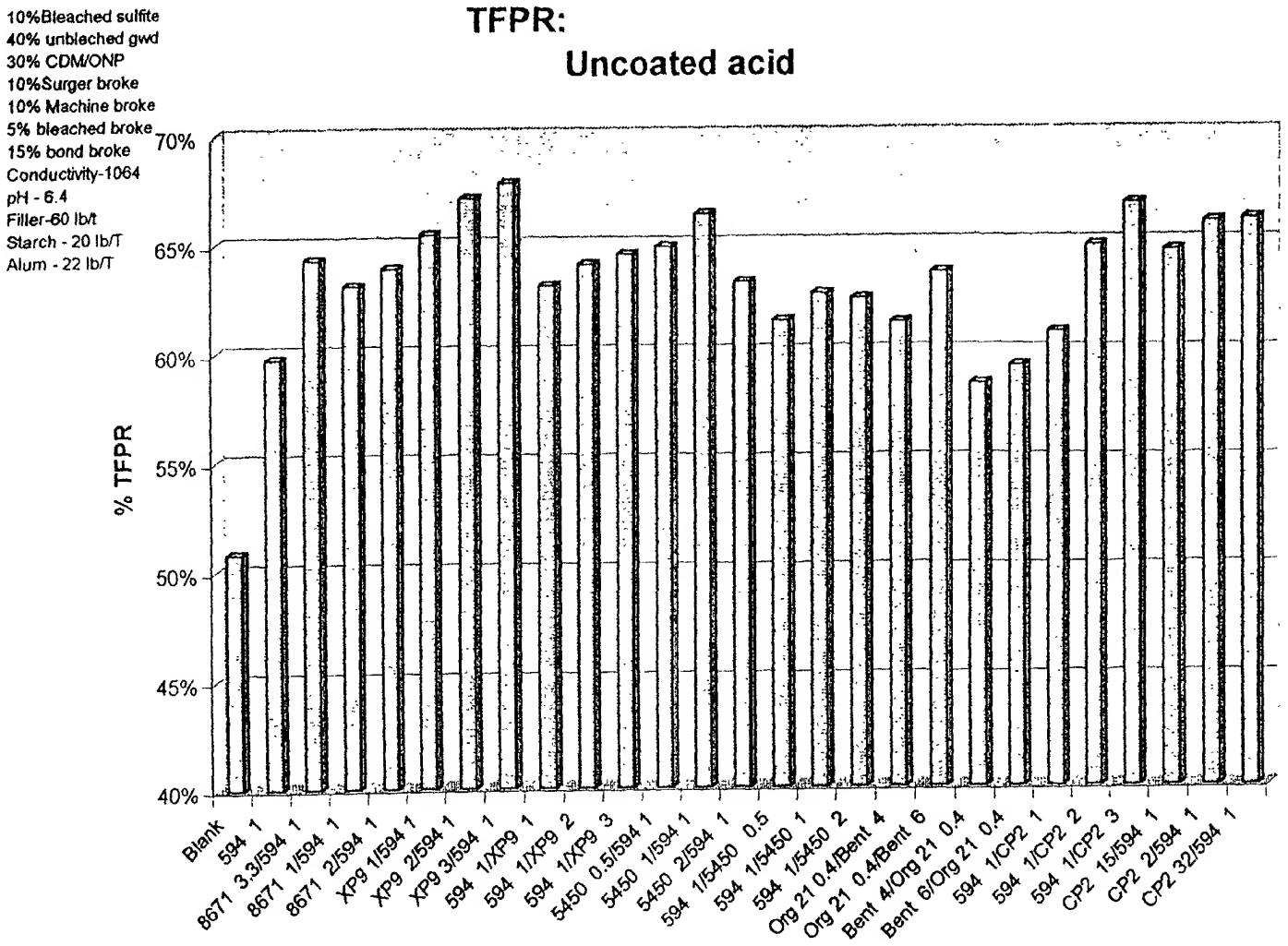

FIG. 22

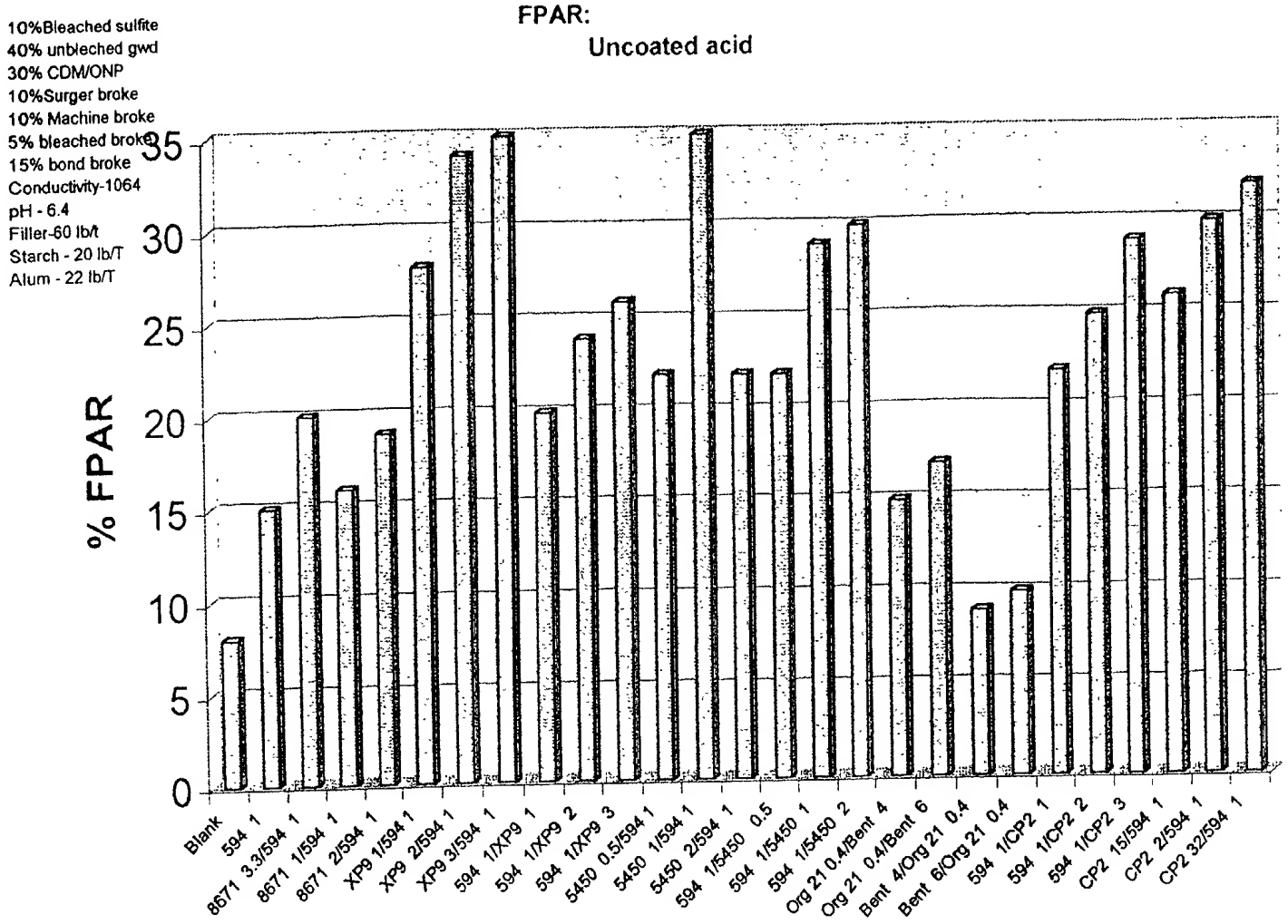

FIG. 23

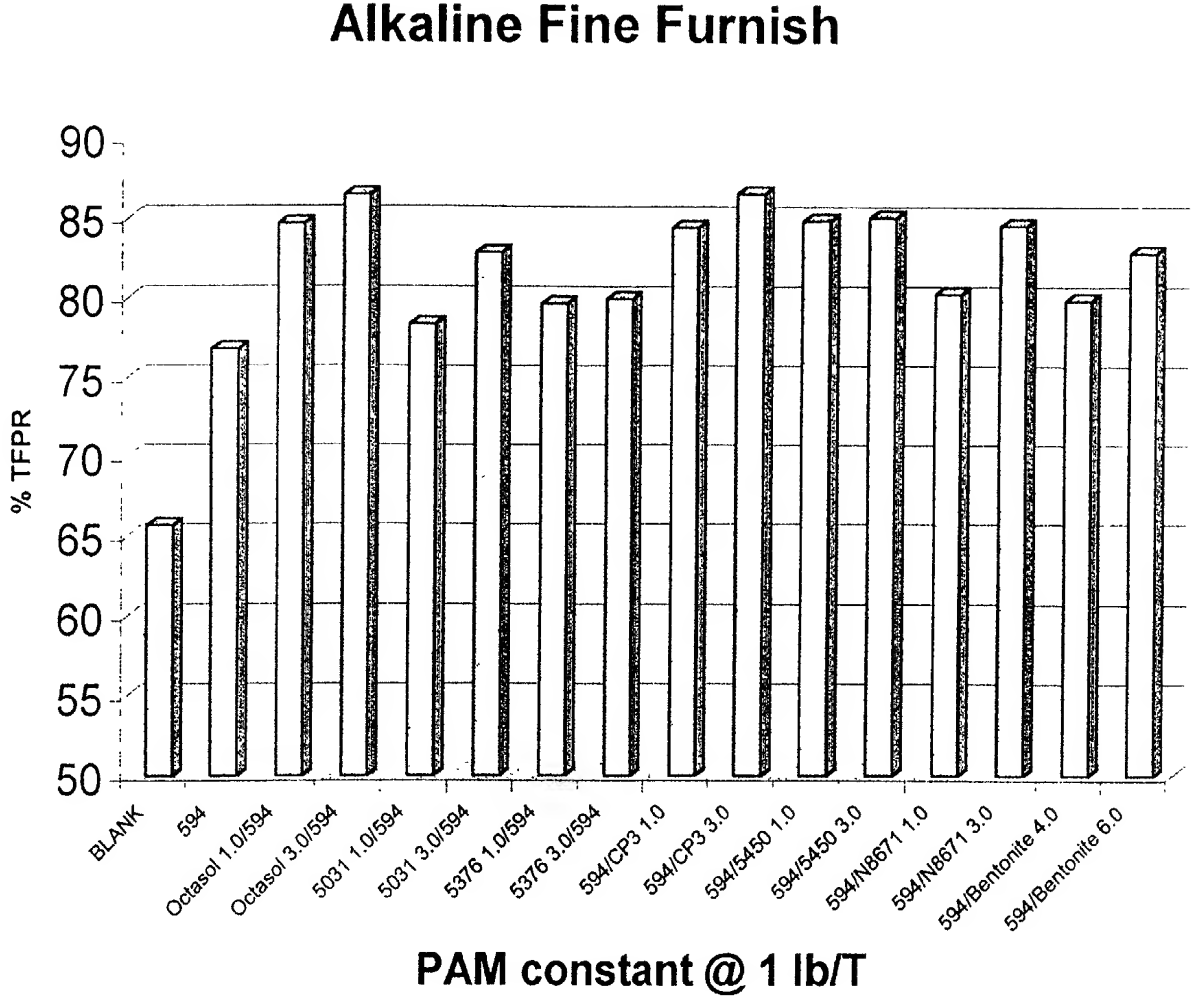
Alkaline Fine Furnish
% TFPR
90
85
80
75
70
65
60
55
50
BLANK
594
Octasol 1.0/594
Octasol 3.0/594
5031 1.0/594
5031 3.0/594
5376 1.0/594
5376 3.0/594
594/CP3 1.0
594/CP3 3.0
594/5450 1.0
594/5450 3.0
594/N8671 1.0
594/N8671 3.0
594/Bentonite 4.0
594/Bentonite 6.0
PAM constant @ 1 lb/T

FIG. 24

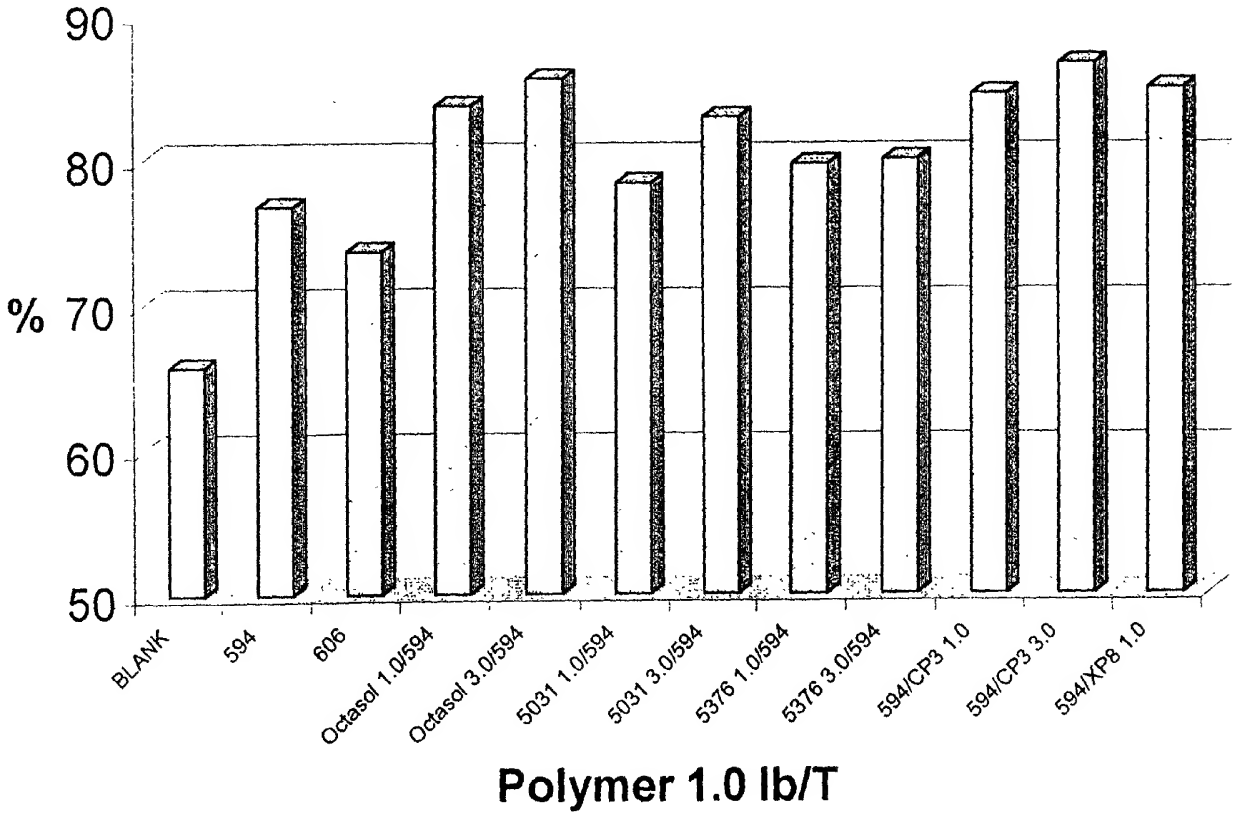
Octasol testing: TFPR
90
80
% 70
60
50
BLANK
594
606
Octasol 1.0/594
Octasol 3.0/594
5031 1.0/594
5031 3.0/594
5376 1.0/594
5376 3.0/594
594/CP3 1.0
594/CP3 3.0
594/XP8 1.0
Polymer 1.0 lb/T

FIG. 25

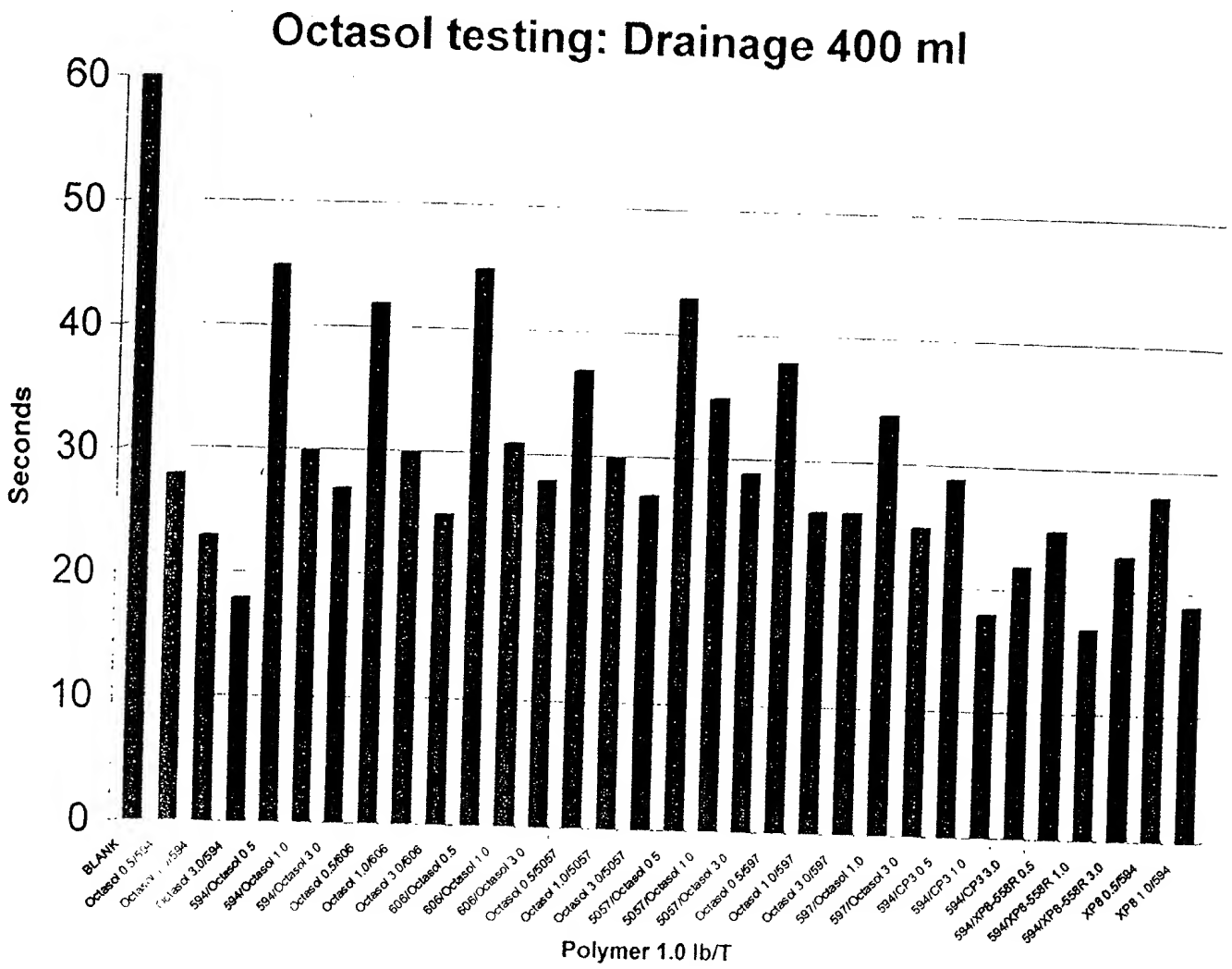
Octasol testing: Drainage 400 ml
Seconds
60
50
40
30
20
10
0
BLANK
Octasol 0.5/594
Octasol 1.0/594
Octasol 3.0/594
594/Octasol 0.5
594/Octasol 1.0
594/Octasol 3.0
Octasol 0.5/606
Octasol 1.0/606
Octasol 3.0/606
606/Octasol 0.5
606/Octasol 1.0
606/Octasol 3.0
Octasol 0.5/5057
Octasol 1.0/5057
Octasol 3.0/5057
5057/Octasol 0.5
5057/Octasol 1.0
5057/Octasol 3.0
Octasol 0.5/597
Octasol 1.0/597
Octasol 3.0/597
597/Octasol 1.0
597/Octasol 3.0
594/CP3 0.5
594/CP3 1.0
594/CP3 3.0
594/XP8-558R 0.5
594/XP8-558R 1.0
594/XP8-558R 3.0
XP8 0.5/594
XP8 1.0/594
Polymer 1.0 lb/T

FIG. 26